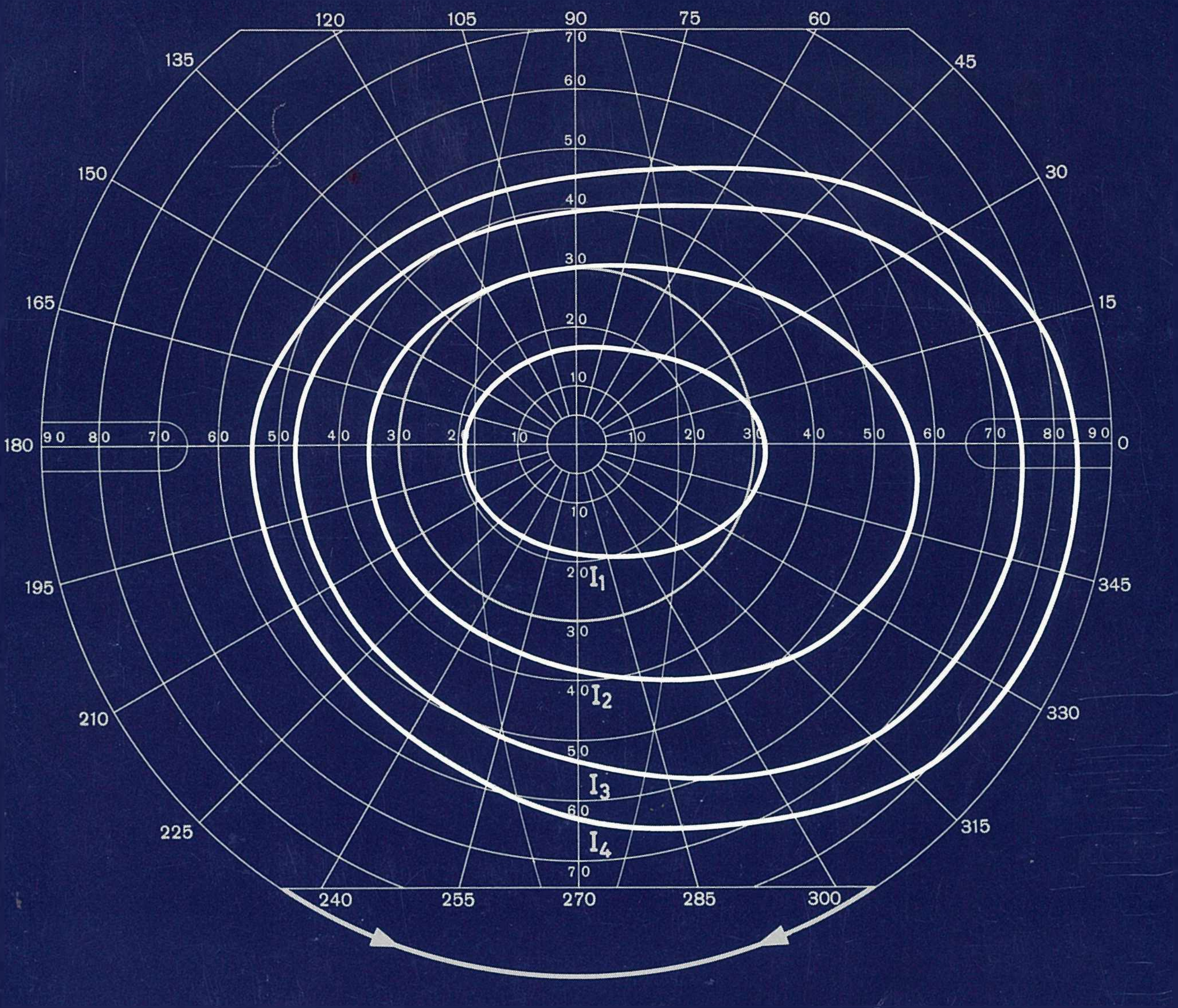

Original Goldmann Perimeter 940

HAAG-STREIT AG

Ophthalmological Instruments 3097 Liebefeld/Switzerland

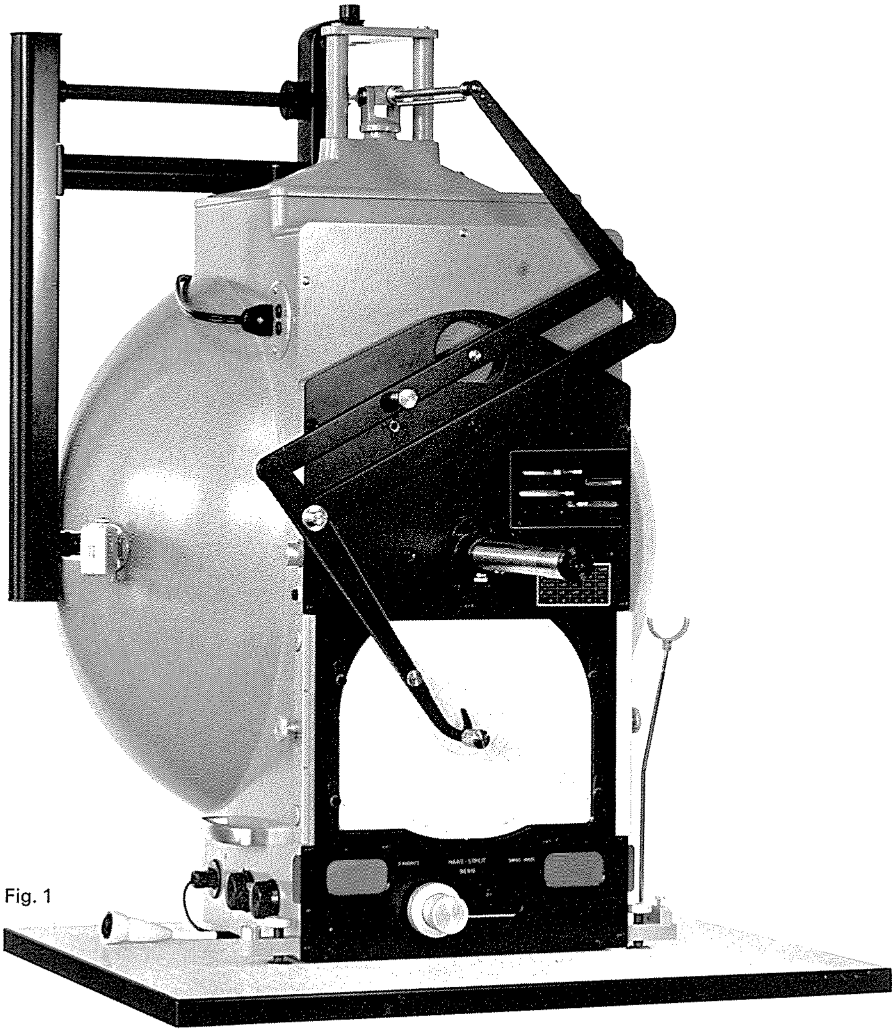

Fig. 1

The Goldmann Perimeter 940 incorporates all the improvements resulting from practical experience of over twenty years in building modern Perimeters. In particular, great value has been attached to the reproduction of normal examination conditions even after years of use. For this reason the projector prisms and grey filters have been made dust-proof and the condenser on the lamp housing can easily be removed and cleaned. The whole instrument is designed for easy handling, so that examinations can be carried out in the dark without any difficulty.

The Goldmann Perimeter 940 is a spherical projection perimeter with a system permitting direct registration of the target position. Illumination of the sphere (radius 30 cm) is constant and uniform, so that for every examination the state of adaptation of the whole eye is identical. The target for determining the differential threshold of light sense in central and peripheral parts of the visual field is projected on to the inside of the sphere. It can be adjusted to six different sizes by means of diaphragms and to four or more intensity levels by means of grey filters. The luminosity of the sphere (normally 31.5 asb) is adjusted by a shutter, and the brightness of the target (normally 1000 asb) by a light-meter and a rheostat; both are illuminated simultaneously by a single bulb. Examination conditions are thus constant and the visual field registered at various times under the same conditions can be compared over a period of years without risk of error, which means that small field changes can soon be detected.

The kinetic quantitative perimetry

Kinetic quantitative perimetry uses a mobile target of fixed luminosity with which positions of equal sensitivity are plotted perpendicularly to the limits of the expected visual fields or isopters through the free movement of the target in all directions. The position of the target in the sphere is always clearly indicated on a large chart. The instrument can easily be handled from the examiner's side and the fixation of the patient's eye can be constantly checked through a reticulated telescope.

Examination of the central visual field requires all ametropia to be corrected to a distance of 30 cm, for which a special holder for correcting lenses is provided.

940–K7 with target sizes of 64, 16, 4, 1, $^1/_4$ and $^1/_{16}$ mm^2 and with built-in set of grey filters for relative light intensity levels of the target of 1.0, 0.315, 0.1 and 0.0315 and second set of grey filters with levels of 1.0, 0.8, 0.63, 0.5 and 0.4 which can be combined with the first set of grey filters.

Colour filters are not incorporated into the instrument, but are supplied on request and can be fixed on to the objective of the projector.

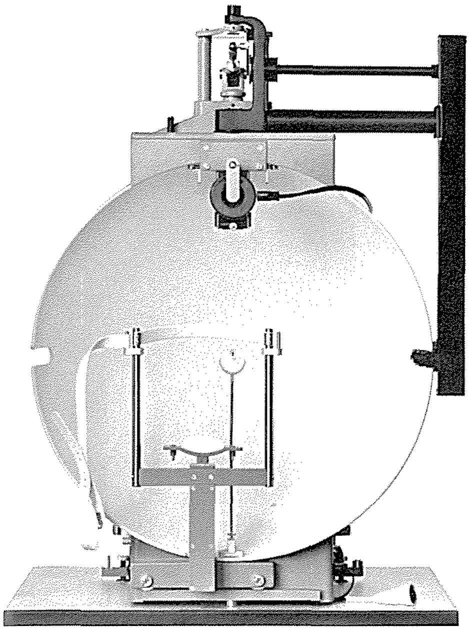

Fig. 2: Patient's side

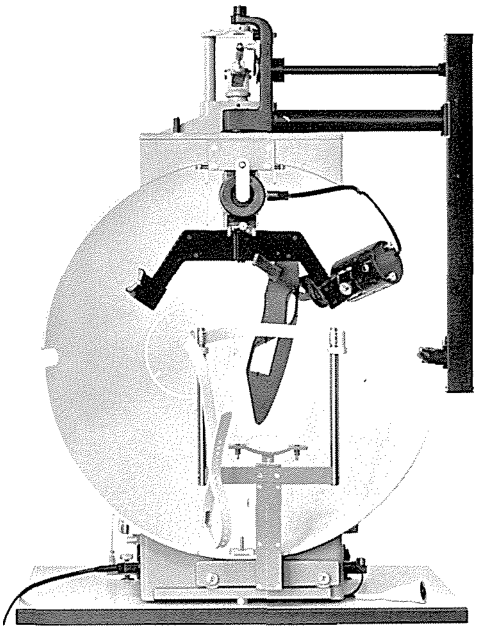

Fig. 3: Perimeter with central scotoma device

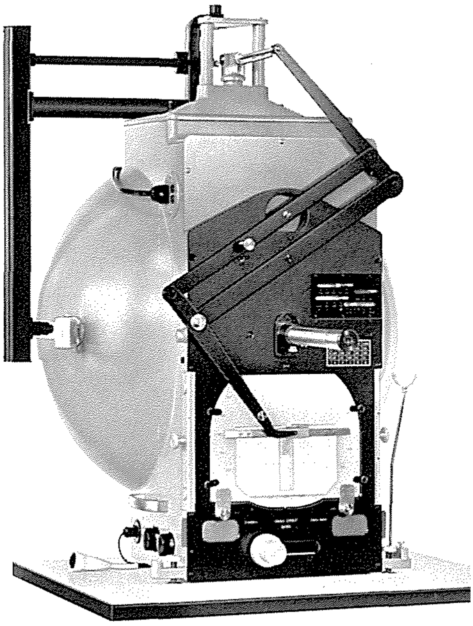

Fig. 4: Perimeter for static perimetry

Central scotoma device

The apparatus for examining central scotoma consists of a fixation mark projector and a mirror plate, both mounted on a mobile arm.
The device permits kinetic perimetric examination of one eye, while the other maintains fixation.
The examined eye is kept steady by fusion of two circles seen separately by each eye. The lateral positioning of the projected circles also aids in recognizing very small relative central scotomata.
The following cases can be examined with the central scotoma device

1. Patients with absolute unilateral scotoma.
2. Patients who have a small relative central scotoma, with a radius up to 5°, on either or on both sides.
3. Patients with small paracentral scotomata.

The static quantitative perimetry

In static quantitative perimetry with the Goldmann Perimeter 940, a fixed target is used to determine the luminosity which at any point of the visual field is found to be just supraliminar. The state of adaptation may be anything between 0 and 40 asb. For both the kinetic and the static quantitative methods, the resulting measurements depend on the luminosity of the sphere and the size of the target. In static perimetry the result may be influenced by local adaptation, while in kinetic perimetry the speed of target movement and the patient's reaction time are very important. Static perimetry appears to be indicated in all cases where an urgent judgment must be made on the progress of a pathological change. In ophthalmology as well as in neurology a diagnosis, and often an evaluation of therapeutic measures, can be obtained with speed and certainty only by the refined methods of static perimetry. In static perimetry, examinations may be carried out on meridians at intervals of 5° and horizontally within a visual field of 60°, sensation thresholds being registered directly on a chart. Among articles needed for this examination are the following accessories: a special plate for the chart, a projector for an auxiliary fixation point, a voltage stabilizer etc.

940–ST	for kinetic and static perimetry: same as model K7, with additional third set of grey filters for levels of 1.0, 0.01 and 0.0001 which can be combined with sets 1 and 2 and various accessories.

By combining the three sets of filters, a large number of different degrees of brightness can be obtained within a range of 10^6 in logarithmic progression. In designing this model special care has been taken to ensure that the instrument can easily be kept in perfect condition by the physician or his staff. Specialised maintenance work should be necessary only in exceptional cases.

Thanks to the variety of examinations possible and to the simplicity with which examination conditions can be checked, the Goldmann Perimeter is a valuable tool for the scientist as well as an essential diagnostic aid for the ophthalmologist in his daily practice. Owing to the direct registration and the ease with which the instrument can be operated, precise findings are obtained in a minimum of time.

1 asb=0.1 millilambert (mL)=0.0929 footlambert (ftL).

Fixation point projector

This accessory (fig. 5) projects a four or a one dot mark 5 degrees to the right of the center of the sphere. The projector serves for examination of relative central and absolute and relative paracentral scotomas. Using complementary coloured push-on or insert-filters, absolute central scotomas can also be examined. This device does not replace the central scotoma device as it does not guarantee the steady fixation of the eye to be examined.

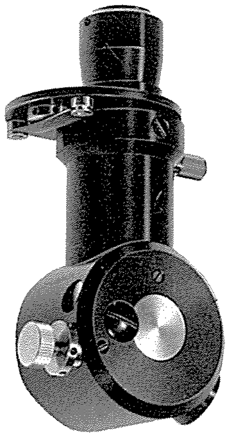

Fig. 5

Recording device

This device (fig. 6) speeds up the examination, eliminates the effects of the examiners reaction time and indicates the direction of the target. A built-in electromagnet activates a marker during 0.4 seconds. The length of the line indicates the speed at which the target was moved. The device therefore enables the examiner to keep a constant speed. It gives more exact fields of vision and a better evaluation of them.

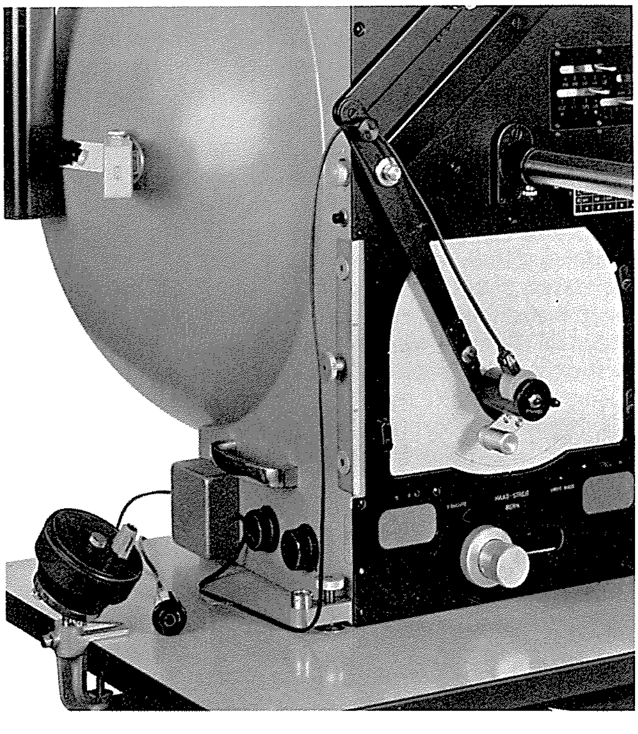

Fig. 6

Trial lenses

The patient's refraction must be corrected for a distance of 30 cm for examination of visual fields within 30°. On request we supply a special drawer containing 102 trial lenses, 38 mm with narrow rim. This complete set contains all the necessary spherical, cylindrical and prismatic lenses.

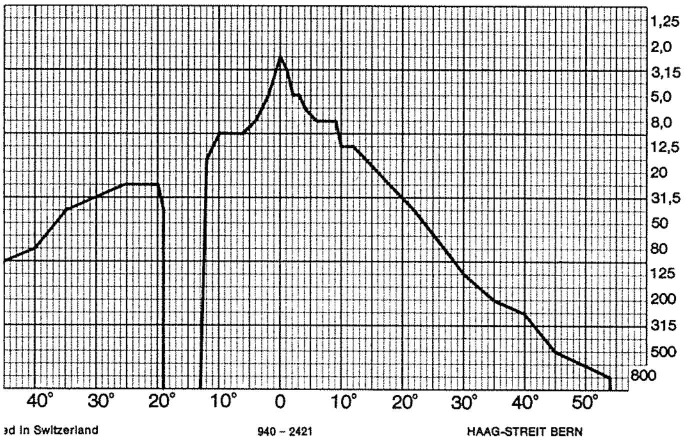

Fig. 7: Normal static profile of a 20 year old

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